LARGE PSEUDO-DIVERTICULUM OF THE DUODENUM.

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THE condition to be described in this communication I believe to be of great rarity, for I have been able to find in literature no report of any similar case.

As early as 1761, Morgagni, as recorded in his *De Causis et Sedibus Morborum*, noted in the body of a man, fifty-four years of age, the existence of a kind of diverticulum of the duodenum, situated at a spot distant two digits below the pylorus, where a loss of substance of the mucosa was evident, forming an orifice capable of admitting a finger leading into a cavity enclosed within the dilated outer coat.[1] In 1872, Roth[2] analyzes the literature of such diverticula up to that time, and adds accounts of five observations of his own. He concludes that they are acquired abnormalities, never contain in their walls all the intestinal coats, and that they occur only in advanced age, or as accompaniments to long-continued marasmus.

They are round, cylindrical, or irregular in shape, and never attain a size larger than a pigeon's egg. For the most part they are collapsed and empty; less frequently they are filled with the contents of the intestine. These diverticula have been found in the upper wall of the transverse portion of the duodenum, but much more frequently in the first or descending portion on its posterior inner wall adjoining the pancreas, where there is no peritoneal covering to the intestine.

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[1] Morgagni, English Abridgment by Cooke, Vol. II, p. 414.

[2] Archiv für pathologische Anatomie, Bd. LVI.

It is obvious that ulcers of the duodenum, when situated on a portion of the gut not covered by peritoneum, as the result of their progress to the point of perforation, may excite varying degrees of suppurative and necrotic changes in the periduodenal tissues thus opened up. Even limited abscess cavities connected with the duodenum must, however, be extremely rare, when the relative frequency of duodenal ulceration is considered, for in my search of the literature of the subject I have found but one reference to any occurrence of the kind, unless the small diverticula, already referred to, owe their origin to such a source. The one reference I have found is in the Index Catalogue of the Library of the Surgeon-General's Office, of the United States Army, and is entitled, "Ulceration of the Duodenum; Formation of an Hepatico-Diaphragmatic Pouch."[1]

In this case, a man, sixty-eight years of age, after having for a year or more been losing flesh and becoming cachectic, was suddenly seized with severe epigastric pain, attended with much shock. Reaction, however, was obtained, but he quickly developed a septic pneumonia and parotiditis, from which he died nineteen days after the attack of epigastric pain. The autopsy was made by Dr. Samuel D. Gross, who found the first portion of the duodenum adherent for several inches to the anterior edge of the liver; on the upper wall of the duodenum, one inch from the pylorus, was a circular opening, six lines in diameter, with thick and well-defined margins. From this proceeded a fistulous track which ran outward along the anterior margin of the liver for about one inch and a half to a point midway between its outer border and the longitudinal fissure. Here, by an opening about five lines in diameter, it opened into a sac, capable of containing about twelve ounces of fluid, which, however, was perfectly empty at the time of examination. This sac was lined throughout by a thick layer of yellow, greenish lymph. It lay between the convex surface of the liver and the diaphragm, being walled in by inflammatory adhesions. The substance of the liver was healthy. The diaphragm was of dark color and deeply congested. The arch of the colon as well as that of the duodenum was adherent to the anterior edge of the liver. The coats of both tubes were perfectly healthy.

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[1] Western Journal of Medicine and Physical Sciences, 1838, XI, pp. 510–514.

With this preamble, I proceed to the relation of my case, the history of which is as follows:

November 18, 1893. Frederick B., a boy, seventeen years of age, was admitted to my service in the Methodist Episcopal Hospital in Brooklyn, with the statement that his general health had been good up to a period about twelve weeks previously, when he began to suffer from pain in his abdomen, associated with tympanites and constipation. Irregular chills and fever with emaciation followed, with diffused tenderness over the whole abdomen. Finally, about two weeks before his admission to the hospital, a more severe pain with a manifest tumor, which was tender to touch, developed in the right inguinal region.

Upon admission he was emaciated and anæmic, the abdomen was flat, was somewhat tender, and with rigid recti muscles, but with no discernible tumor. His temperature was 99.6° F.; pulse 100, and respirations 26. For some five days his temperature and pulse steadily declined towards the normal point. Then the temperature began to display a daily evening rise of from two to three degrees, and a dimly-outlined tumor below the umbilicus, projecting to the right of the margin of the rectus muscle, could be felt.

The abdominal cavity was now opened by a median longitudinal incision below the umbilicus. Normal-looking intestines and peritoneum came into view. Pushing the mass of small intestine to the left, and the ascending colon to the right, there was exposed behind the peritoneum, lying in front of the lumbar vertebræ, and over the great vessels, and projecting forward into the abdominal cavity, a flattened, irregularly heart-shaped tumor, whose base was lost under the transverse colon above, while its apex overhung the brim of the pelvis below where it was adherent upon the right side to the last portion of the ileum and the adjacent portion of the cæcum. A sense of fluctuation within it was elicited by palpation, and while this examination was in progress its wall gave way on its presenting convexity sufficiently to permit a few drops of puriform fluid to ooze out. The opening thus made was enlarged; an ounce or two of brown puriform fluid escaped on the sponges; the finger on introduction into the cavity felt several small solid masses, which, on removal with a scoop, proved to be pieces of partly-digested vegetable material; the cavity evidently did or had recently communicated with the intestinal tract high up; the exploring finger, passed upward, disappeared underneath the transverse colon, and did not reach the upper limit of the cavity. All its relations pointed to the duodenum as the origin of the abscess.

From the first the general peritoneal cavity was protected by suitably-placed sponges; now the abscess cavity was irrigated out, two drainage-tubes were inserted, and a suitable packing of iodoform gauze placed so as to continue the isolation of the abscess opening and the drainage-track from the general peritoneal cavity.

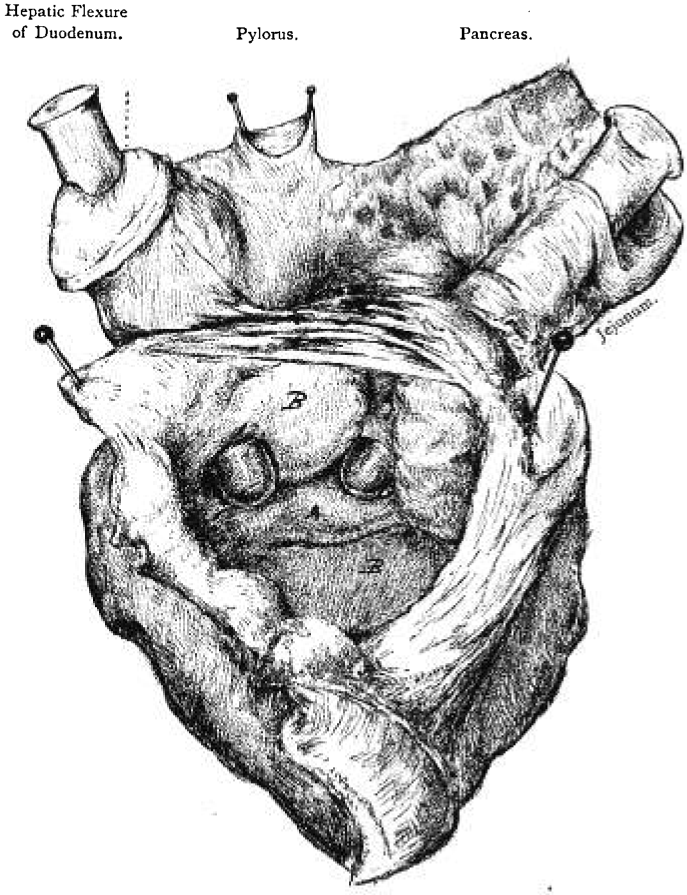

FIG. 1.—Pseudo-diverticulum of the duodenum. One-half actual size. A. Strip of mucous membrane. B.B. Inflammatory connective-tissue wall. Test-tubes protrude into sac through the openings into it of the duodenum and the jejunum.

The patient rallied well from the operation; an abundant bilious discharge from the drainage-tubes began at once to appear, and as soon as milk began to be administered, this also would escape from the drainage-tubes quickly after being swallowed. Infection of the general peritoneum was not prevented, and on the third day the patient died from the consequent peritonitis.

Post-mortem dissection showed the tumor to be formed of a thick-walled sac, its cavity holding about six ounces, broadening at its upper part, across the posterior surface of which part was traceable a band of normal mucous membrane, about one inch in width, which was continuous at either lateral angle with the proper intestinal canal. At the right upper horn the descending portion of the duodenum opened directly into the sac, pouting into it in a manner resembling the termination of the ileum at the ileo-cæcal junction. Just within the intact duodenum could be demonstrated the opening into it of the common choledoch duct.

The sac thus formed and related was a veritable interruption in the continuity of the intestinal canal, a large pocket or diverticulum, as shown in the accompanying figure (Fig. 1), into which all the ingesta transmitted by the stomach, together with the bile, was discharged by the duodenum on the one side, and from which it had exit on the other side into the jejunum. Minute examination of the innermost layer of the sac wall showed it to be composed purely of inflammatory connective tissue except along the limited portion mentioned above where the strip of mucous membrane was still visible. The line of demarcation between the mucous membrane and the inflammatory connective tissue lining was very sharp and well-defined.

Report of Pathologist.—Microscopic examination of the inner one centimetre of the wall of the abscess sac shows a condition of chronic inflammation. Sections of the nodules projecting into the tumor of the cavity, in its posterior wall, show them to be lymphatic tissue infiltrated with inflammatory cells. The larger part of the wall is made up of connective tissue in various stages of chronic inflammatory infiltration. Below a line horizontal to the lower border of the duodenum, at its entrance into the abscess cavity, the lining of the sac shows no trace of glandular or epithelium structure. The innermost layer of inflammatory connective tissue forms the lining membrane of the whole lower part of the cavity. Resting upon this is a layer of granular *débris*, and here and there patches of cells, some in a state of necrosis and others resembling young granulation-tissue cells. Infiltrating this granular material and the loose superficial cells, but not penetrating into the deeper connective-tissue structures, are numerous colonies of cocci of various sorts. That portion of the lining lying superior to the above-mentioned horizontal line is elevated about three millimetres from the level of the surface below, and is thrown into perpendicular folds similar to the transverse rugæ within the intestine. Microscopic examination of this portion of the lining of the cavity shows it to be mucous membrane of the intestinal type, densely infiltrated with inflammatory cells, and lying upon a bed of connective tissue largely of inflammatory origin.

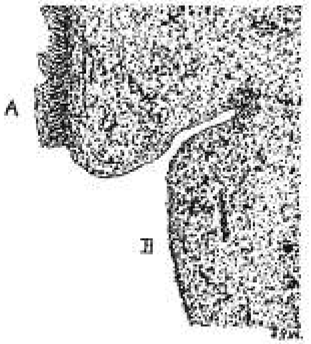

FIG. 2.—× 10. Taken from wall of sac at the lower border of mucous lining. Showing elevation of mucosa, A.

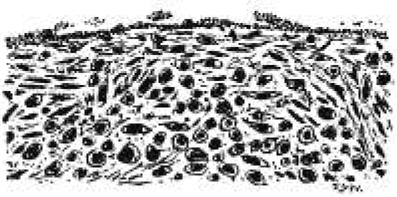

FIG. 3.—× 500. Portion of wall of sac not covered by mucous membrane (B, Fig. 1).

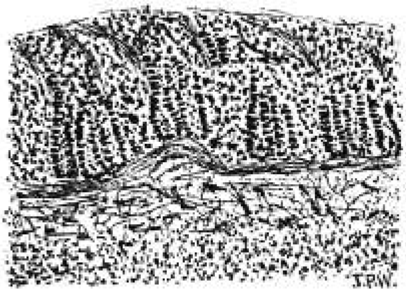

FIG. 4.—× 75. Portion of wall of sac containing traces of mucous membrane (A, Fig. 1).

Sections through edge of mucosa and adjacent portion of the sac wall of inflammatory formation.

The etiology of such a condition as this must be a matter of interesting speculation. The most plausible theory is that which presupposes the occurrence of thrombosis of one of the duodenal arterioles, necrosis and digestion of the portion of the duodenal wall whose nutrition was thus enfeebled or destroyed, gradual invasion of the post-peritoneal connective tissue opened into by this process of ulceration, forming a sac with walls more or less thick, formed largely of inflammatory connective tissue. There was a manifest tendency of the limiting walls of the sac to thinning at certain points from distention and absorption. This had threatened a rupture at its apex near the cæcum before the admission of the patient to the hospital, but rupture had been prevented for the time by an adhesive peritonitis which had caused the ileum and cæcum to become adherent to it. This localized peritonitis had at that time occasioned symptoms simulating appendicitis. At the time of the operation it is evident that a rupture into the general peritoneal cavity was imminent at the point where rupture did occur when it was exposed and under examination.